

REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1-25 are currently pending. Applicant has previously elected without traverse claims 1-3, 6-17, 23 and 24 wherein claims 4, 5, 18-22 and 25 have been withdrawn from consideration. It should be noted the Examiner failed to discuss or acknowledge claim 25 in the February 14, 2008 Office action.

Applicant gratefully acknowledges the indication of allowable subject matter in claim 17 when presumably dependent upon claim 14. In response, claim 17 has been amended to be in independent form as presented in currently amended claim 17.

The drawings stand objected to for failing to comply with 37 CFR 1.84(p)(4). In response, the specification has been amended such that reference character "61" now only designates a processor unit, reference character "38" now only designates corrugations and reference character "36" now only designates the radially inner axially extending portion in order to overcome this objection.

The specification stands objected for failing to specify the references from which it claims priority in the first sentence after the title. In response, there is no indication the present invention claims priority in the first sentence after the title and therefore we believe this objection is unwarranted.

The disclosure stands objected to because of informalities with the specification. In response, (1) a corrected formal drawing for figure 2 is attached hereto including reference characters 43A and 43B, (2) the specification has been amended to reflect that the embodiment of compressor rotor blade tip seal 48B in figure 4 is substantially the same as the compressor rotor blade tip seal 48 in figure 2, (3) to identify the electric cable with reference character "51" at Page 10 line 22, (4) to identify that the member 52, not 53, adjusts the radial position at Page 10 line 33, (5) to identify the inner limb, at Page 11 line 12, as reference character 80, which is now included in the attached corrected formal drawing for figure 6, and (6) to correct identify reference character 36 as a

radially inner axially extending portion at Page 13 line 3, Page 12 lines 7 and 34, Page 11 lines 26 and 32 and Page 7 line 17.

Claim 17 stands objected to under 37 CFR 1.75(c) as being in improper form. Accordingly, claim 17 has been amended to be in independent form as presented in currently amended claim 17.

Claims 1-3, 6-7, 10, 14-16, 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,545,007 (MARTIN) in view of U.S. Patent 5,366,255 (GARKAWE). Applicant respectfully traverses this rejection for the following reasons.

The present invention provides a seal between first and second movable members that are spaced from one another. A third member is secured to one of the first or second members and to a lining adjacent to but spaced from the other of the first or second members. More importantly, the third member has at least one corrugation in a direction between the first and second members and at least one corrugation in a direction transverse to this direction as expressly claimed in original claim 1. The corrugations along the radially outer, intermediate and inner axially extending portions, 32, 34 and 36 respectively, extend axially whereas the corrugations along bend portions 33 and 35 extend radially (See figure 3). In other words, the third member is corrugated simultaneously in two mutually perpendicular directions.

MARTIN discloses an active blade tip clearance control system having a piezoelectric actuator 12 secured alternatively to the engine casing 4 and the seal shroud segments 10 of the engine which gives the actuator 12 it's corrugated shape. However, as noted by the Examiner under section 7 of the February 14, 2008 office action, MARTIN fails to teach or disclose the actuator 12 having at least one corrugation in a direction between first and second members and at least one corrugation in a direction transverse to that direction as claimed in original claim 1.

GARKAWE discloses an expansion seal assembly for a fluidized bed reactor application. An outlet is created by bending a portion of the tubes 16 forming the furnace walls in order to provide a square cross-section outlet pipe

(Column 3 line 55 to Column 4 line 9; See Figure 2). A conduit 20 is formed in a similar fashion with the connection end being of greater diameter so that the outlet pipe can slide within the conduit. A seal connects the outlet pipe and conduit so that they are in spaced relation. This allows the outlet pipe and conduit to move relative to each other in the axial and both lateral directions (Column 4 lines 28-33). Two embodiments of GARWARKE'S invention are shown, both inventions having corrugations provided on closure plates. More importantly, the corrugations of GARWARKE are shown in both embodiments to be in a single direction only. In the first embodiment reflected in figure 3, the corrugations 28a and 30a are in the plane vertically into the page (Column 4 lines 53-65). In the second embodiment reflected in figure 4, the corrugations 58e are in the plane horizontally into the page (Column 6 lines 27-39). GARWARKE fails to teach or disclose one corrugation in a direction between the first and second members and at least one corrugation in a direction transverse to the direction between the first and second members as expressly claimed in currently amended claim 1.

Thus, neither MARTIN nor GARWARKE discloses double corrugations in mutually perpendicular directions, as required in the present invention, whether these references are considered individually or in combination. Furthermore, there is little motivation to combine these references since they relate to sealing in very different fields. MARTIN being directed to seals in gas turbine engines and GARWARKE directed to seals in a fluidized bed reactors.

Therefore, since both MARTIN and GARWARKE disclose corrugations in a single direction, there is no reason or rationale to add one disclosure to the other in seeking an alternative to the single corrugation direction approach. At most, the references can be seen to provide corrugations in one direction or in the alternative a second direction, but not both directions simultaneously. It would therefore be unobvious for a person skilled in the art to combine these references and obtain the present invention as originally claimed. For all the above reasons, the present invention is believed novel and inventive over the combination of MARTIN and GARWARKE as originally claimed.

Claims 8, 9, 11 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over MARTIN and GARWARKE in further view of U.S. Patent 6,547,522 (TURNQUIST et al.). MARTIN and GARWARKE have been distinguished from the present invention above.

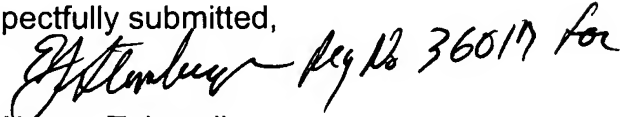
The Examiner relies on TURNQUIST et al. for providing a Z-shaped third member. TURNQUIST et al. discloses a zigzag cross-section spring provided to bias the seal carrier, and particularly the abradable portion thereof, towards the rotating parts. This zigzag spring is not the doubly corrugated seal member disclosed in the present invention. TURNQUIST et al. neither discloses nor provides any reason to corrugate the seal segments, and certainly not to provide corrugations in two mutually perpendicular directions. More importantly, nor does the combination of TURNQUIST et al. with MARTIN and/or GARWARKE provide such motivation or arrangement. Therefore, the present invention is believed novel and inventive over the combination of MARTIN, GARWARKE and TURNQUIST et al. as originally claimed.

Claim 12 stands rejected under 35 U.S.C. 103(a) as being unpatentable over MARTIN and GARWARKE in further view of U.S. Patent Application Number 2001/0006278 (HAJE). MARTIN and GARWARKE have been distinguished from the present invention above.

HAJE discloses a sealing element (deformation region 3) between a rotating and a stationary component (shaft 21 or blade 27, and casing 23). The sealing element of HAJE is corrugated in the axial direction but is not corrugated in either the radial or circumferential directions. Moreover, the Examiner relies on HAJE to reflect the prior arts knowledge of providing a third member comprising steel, titanium, a titanium alloy or a nickel alloy. Thus, since HAJE does not teach, disclose or provide corrugations in two mutually perpendicular directions, as in the present invention, the present invention is believed novel and inventive over the combination of MARTIN, GARWARKE and HAJE as originally claimed.

Entry of this amendment is solicited, is believed appropriate, and is believed to distinguish the invention from the cited references. For the foregoing reasons, reconsideration and allowance are believed in order and are solicited.

Respectfully submitted,


W. Warren Taltavull
Reg. No. 25647

Manelli Denison & Selter PLLC
Customer Number 20736
Tel - (202) 261 1047